canadair

AEROSPECIALISTS
FOR THE EIGHTIES

BACKGROUND INFORMATION

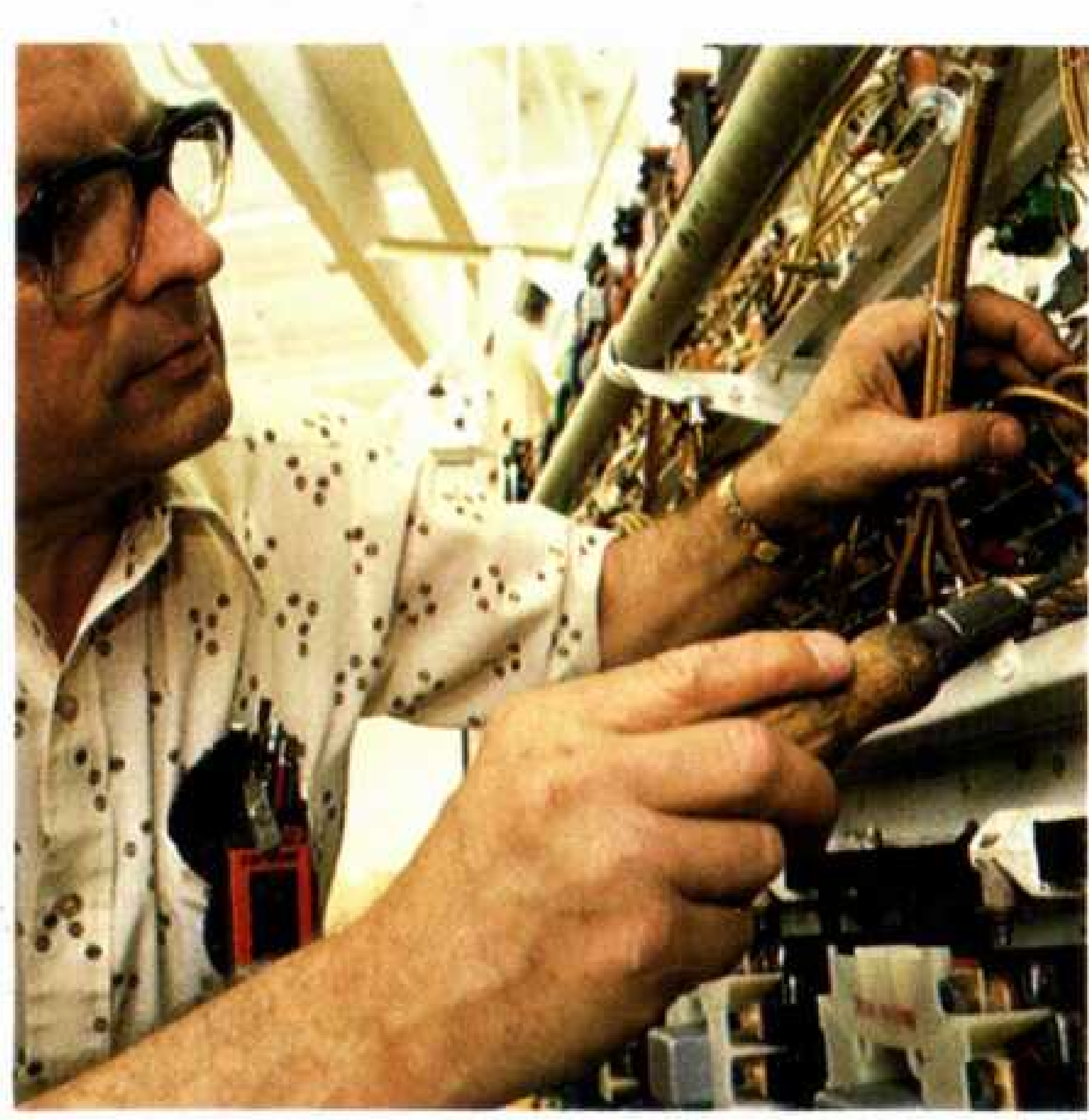


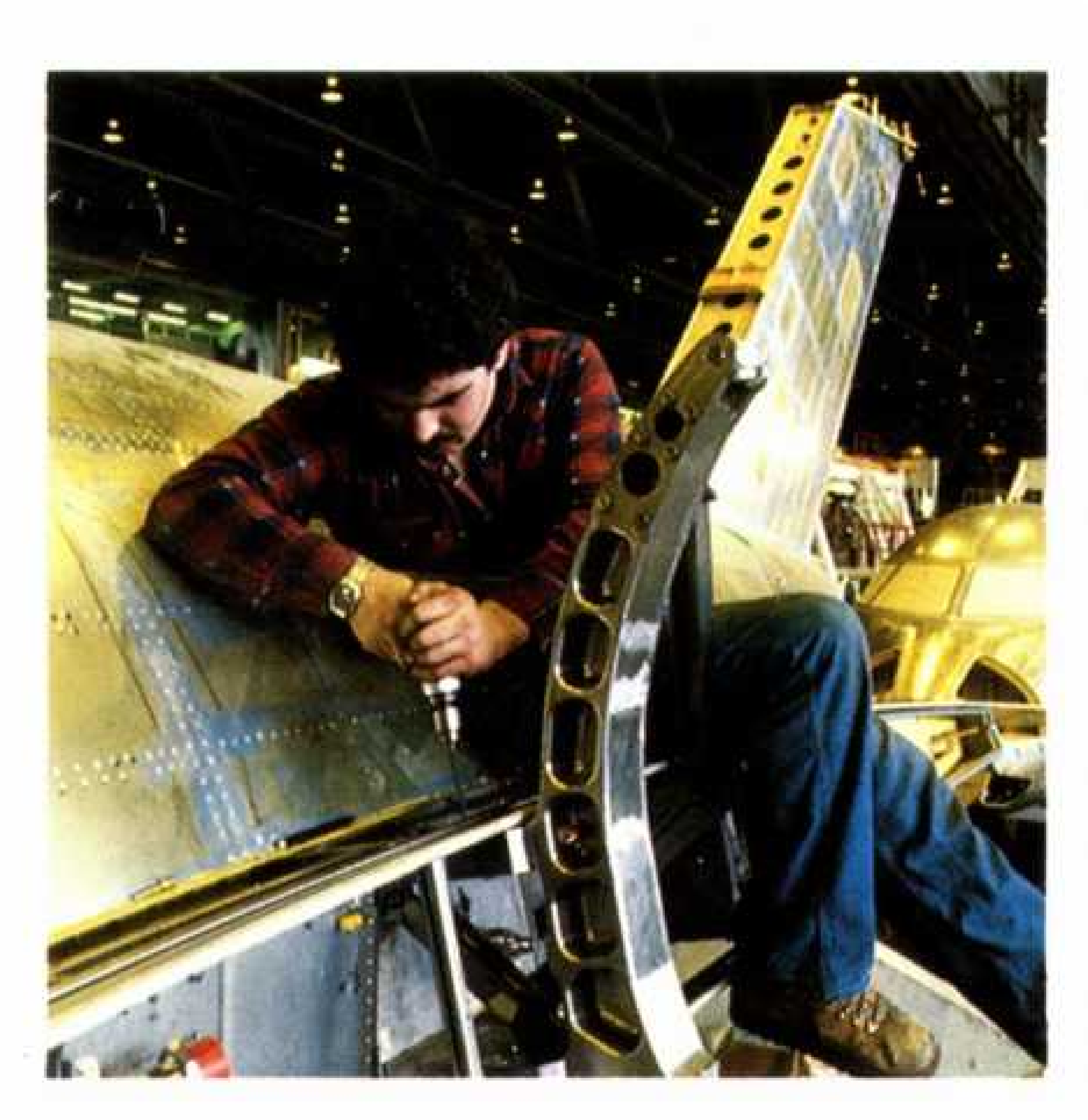
Canadair Limited is Canada's foremost aircraft manufacturer. Since its incorporation in 1944, the company has manufactured over 3900 aircraft, of which 580 were supersonic, as well as unmanned airborne surveillance systems and numerous other products including components for most of the major North American aircraft manufacturers.

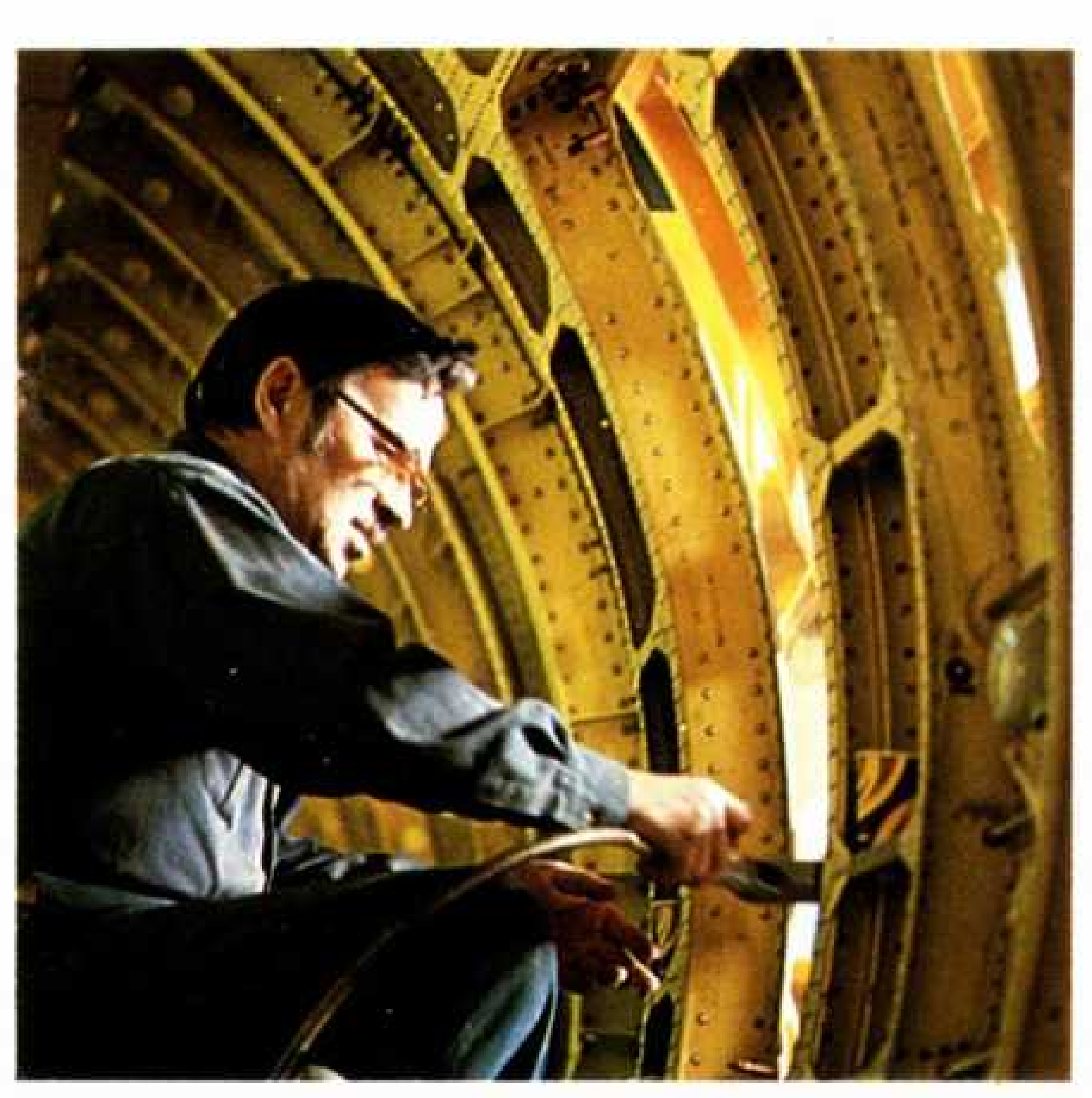
Since 1976, Canadair has been wholly owned by the Canadian Government and is now a subsidiary of the Canada Development Investment Corporation, a Crown corporation.

Canadair has three plants located at Cartierville Airport in Saint-Laurent, a suburb of Montreal, Canada, and a fourth plant at nearby Dorval International Airport. Total land area is 224 acres (90.65 hectares) while the building area under cover is 2.7 million square feet (250,830 sq. metres). Canadair Challenger Inc., a subsidiary responsible for the marketing and support of the Challenger aircraft program, operates from Westport, Conn. Challenger Service Centers are located near Hartford, Conn. and Munich, Germany. Canadair currently employs 4520 people.













CHALLENGER 600

The Challenger is a twin-engined jet aircraft which features a wide-bodied fuselage, advanced technology wing and quiet, fuel-efficient turbofan engines.

The transcontinental Challenger 600 is powered by Avco Lycoming ALF 502L engines.

Technical Data

Engines:	Two Avco Lycoming ALF 502L		
	Thrust	7,500 lb.	3,402 kg
Aircraft Dimensions:	Wing span	61 ft. 10 in.	18.85 m
	Length	68 ft. 5 in.	20.85 m
	Height	20 ft. 8 in.	6.30 m
Cabin Dimensions:	Length	28 ft. 3 in.	8.61 m
	Width (centreline)	8 ft. 2 in.	2.49 m
	Headroom	6 ft. 1 in.	1.85 m
	Area	202 sq.ft.	18.81 m^2
	Volume	1150 cu.ft.	32.56 m^3
Weights:	Maximum take-off	41,100 lb.	18,643 kg
	Maximum landing	36,000 lb.	16,329 kg
	Max. zero fuel	28,500 lb.	12,927 kg
	Typical Operating weight empty	23,285 lb.	10,562 kg
	Max. fuel load	14,890 lb.	6,754 kg
	Payload – full fuel	3,075 lb.	1,395 kg

Performance:		Mach	kts	mph	km/h
Speed:	Normal cruise	0.77	442	507	819
			n.mi.	sta.mi.	km
Range:	NBAA IFR at long range cruise (5 pass.)		2,800	3,222	5,186
Ceiling:	Max. operating altitude		41,000 ft.		13,716 m
Airfield Performance:	Balanced field length at max. take-off weight		5,700 ft.		1,737 m
	Landing distance at max. landing weight		3,300 ft.		1,006 m
Noise Level:	Take-off				84.7 EPNdB
	Approach				91.6 EPNdB
	Sideline				89.5 EPNdB



CHALLENGER 601

The intercontinental Challenger 601 is powered by General Electric CF34-1A engines and is equipped with winglets for improved cruise efficiency.

Technical Data

Engines:	Two General Electric CF34-1A		
	Thrust	8,650 lb.	3,924 kg
Aircraft Dimensions:	Wing span	64 ft. 4 in.	19.61 m
	Length	68 ft. 5 in.	20.85 m
	Height	20 ft. 8 in.	6.30 m
Cabin Dimensions:	Length	28 ft. 3 in.	8.61 m
	Width (centreline)	8 ft. 2 in.	2.49 m
	Headroom	6 ft. 1 in.	1.85 m
	Area	202 sq.ft.	18.81 m^2
	Volume	1150 cu.ft.	32.56 m^3
Weights:	Max. take-off	43,100 lb.	19,550 kg
	Maximum landing	36,000 lb.	16,329 kg
	Max. zero fuel	29,500 lb.	13,381 kg
	Typical operating weight empty	24,585 lb.	11,152 kg
	Max. fuel load	16,665 lb.	7,559 kg
	Payload – full fuel	2,000 lb.	907 kg

Performance:		Mach	kts	mph	km/h
Speed:	Normal cruise	0.77	442	507	819
			n.mi.	sta.mi.	km
Range:	NBAA IFR at long range cruise (5 pass.)		3,440	3,959	6,371
Ceiling:	Max. operating altitude		41,000 ft.		13,716 m
Airfield Performance:	Balanced field length at max. take-off weight		5,400 ft.		1,646 m
	Landing distance at max. landing weight		3,550 ft.		1,082 m
Noise Level:	Take-off				79.9 EPNdB
	Approach				89.4 EPNdB
	Sideline				84.8 EPNdB

NOTE: Challenger data are based on actual flight experience; for performance guarantees, see Technical Specifications.



THE CL-215

The CL-215 is a twin-engined amphibious aircraft. Primarily intended for forest firefighting, the CL-215 is adaptable to a wide variety of roles involving water operations and flight at low speeds and low altitudes.

As a firefighter, the aircraft's main operational advantage lies in its ability to scoop 1176 Imperial gallons (1410 U.S. gal., 5347 litres) of water in ten seconds as it skims over the surface of any suitable body of water.

Engines:	Two Pratt & Whitney R 2800 – CA-3: 2,100 bhp each		
Dimensions:	Wing span	93 ft. 10 in.	28.60 m
	Length	65 ft. 0.5 in.	19.82 m
	Height	29 ft. 5.5 in.	8.98 m
Weights:	Maximum take-off		
	(land)	43,500 pounds	19,731 kg
	(water)	37,700 pounds	17,100 kg
	Maximum landing		
	(land) * and water	37,000 pounds	16,783 kg
	Max. payload	12,000 lb.	5,443 kg
Speed:	Maximum cruise	190 mph	305 km/h
Range:	with 3,500 lb. (1,588 kg) payload @ long range cruise power	n.mi. sta.mi. km 1,130 1,300 2,095	
Endurance:	Typical firefighting time	4.5 hours	
Scooping:	Time: 10 seconds		
	Distance (50 ft. to 50 ft.):	3,940 ft.	1200 m

Passenger Capacity: Standard: 8 Optional: 26
Most drops by one aircraft in one day: 225, Yugoslavia 1982
Most drops by one aircraft in one hour: 31, Quebec 1975
Operators: Canada, France, Greece, Italy, Spain, Thailand, Venezuela, Yugoslavia

* Certification in process

SURVEILLANCE SYSTEMS

These are intelligence-gathering devices for battlefield commanders. The CL-89 and CL-289 drone systems consist of unmanned air vehicles (drones) plus related support equipment. The drone is launched from a zero-length launcher by a rocket booster. Thrust for sustained flight is provided by a turbojet engine. The drone flies a programmed course and is recovered by parachute. The CL-227 Surveillance and Target Acquisition System is a remotely piloted air vehicle plus support equipment. The air vehicle can take-off and land vertically, hover and fly horizontally. Its sensor transmits real-time data.



CL-89

Length: 8 ft. 6.5 in. (2.6 m): Diameter: 13 in. (33 cm)
Weight at launch (less booster) 238 lb. (108 kg)
Speed: 460 mph (741 km/h) Range: 87 sta.mi. (140 km)
Sensors: Photographic or Infra-red Line Scan
Users: West Germany, U.K., Italy, and France



CL-289

Length: 11 ft. 10 in. (3.61 m): Diameter: 15 in. (38 cm)
Weight, Speed and Range: Classified
Sensors: Photographic and Infra-red Line Scan with real-time data link.
Users: Being developed by Canadair and Dornier GmbH for West Germany and France .



CL-227

Height overall: 5 ft. 5 in. (1.64 m)
Rotor disc diameter: 8 ft. 4 in. (2.54 m)
Weights: max. take-off 339 lb. (154 kg):
Fuel 81 lb. (37 kg)
Payload 68 lb. (31 kg)
Speed: 70 kts (130 km/h): Typical mission endurance 3 hours
Sensor: Radar, thermal or TV imaging systems and laser designating equipment

MAJOR CURRENT SUB-CONTRACTS



BOEING 767

Canadair manufactures the rear fuselage section for the new Boeing 767 aircraft. The section is a truncated cone 31 ft.(9.5 m) long.



LOCKHEED C-5B

Canadair is producing wing leading edge ribs and islands, slats, slat tracks, ailerons and aft cargo doors for the C-5B Military Transport.



LOCKHEED P-3C ORION

Canadair manufactures components for the Orion Long Range Patrol Aircraft including outerwing and centerwing boxes, aft body, forward and aft radomes, and electrical load center.



MCDONNELL DOUGLAS F/A-18A

Canadair has a contract to produce forward fuselage nose barrels for the CF-18 and F/A-18A strike fighters.



MCDONNELL DOUGLAS F-15

Since 1974 Canadair has been manufacturing components for the F-15 Eagle. All entail close-tolerance machining from solid billets or forgings.

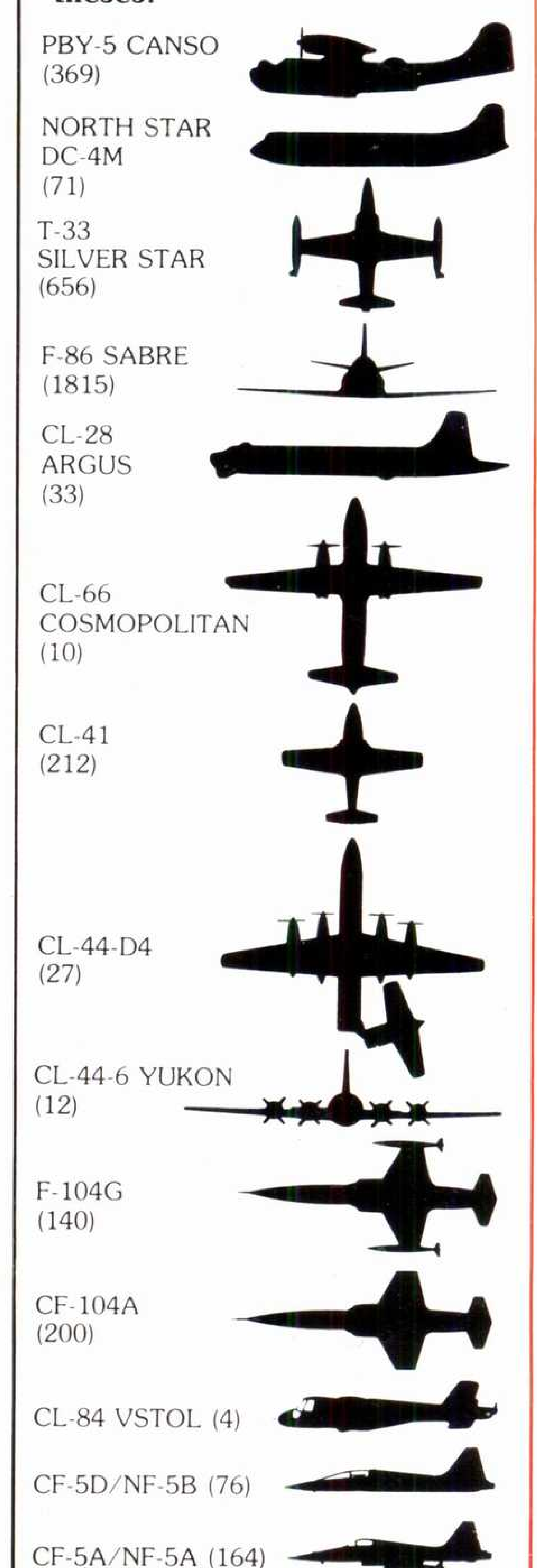


NORTHROP F-5 & CF-5

Canadair is a supplier of replacement horizontal stabilizers for the USAF F-5 and the Canadian Forces CF-5.

AIRCRAFT PRODUCTION HISTORY

To-date Canadair has produced over 3900 aircraft including 3200 jet aircraft of which 580 were supersonic. The completed programs are listed below with numbers of aircraft produced shown in parentheses.



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SP 676 Revised March 1985

Litho Canada

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CL-215 Amphibious Aircraft

One of the most versatile aircraft in production today is the CL-215 manufactured by Canadair Limited of Montreal, Canada.

The CL-215 is a rugged twin-engined amphibian, capable of long range and endurance. Designed for prolonged low speed, low altitude operation the CL-215 has excellent handling characteristics and can perform a number of roles including firefighting, spraying, patrol, search and rescue, and transportation.

The CL-215 has a wingspan of 28.6 metres (94 feet) and a maximum gross weight of 19,731 kilograms (43,500 pounds). It is powered by two 2100 bhp Pratt and Whitney R-2800 engines, carries up to 5,442 kilograms (12,000 pounds) of payload and cruises at 306 kilometres/hour (165 knots).

When firefighting, the CL-215 carries 5346 litres (1176 Imp. gal.) of suppressant in two internal tanks. The tanks are filled in less than ten seconds by scooping water through two retractable probes as the aircraft skims over the surface of any suitable body of water. Alternatively the tanks can be loaded on the ground in less than two minutes through adaptors located on either side of the fuselage. The CL-215 can fight fires for up to four hours before refuelling is required. On one occasion a single CL-215 made 225 water drops on fires in a single day and another made 31 in one hour. The CL-215 frequently fights fires in the most adverse environments including heavy smoke and strong winds. The aircraft is capable of scooping in wave heights of up to 1.2 metres (4 feet).

An integrated spray system has been designed especially for the CL-215, and is suitable for the application of a variety of liquids such as pesticides and oil dispersants. Aerial application of oil dispersants has proven to be effective in trials during which recently-developed low toxicity oil dispersants were applied to crude oil in salt water. The CL-215 can carry out normal firefighting operations with the spray boom attached.

In the patrol or search and rescue roles the CL-215 has a maximum endurance of 10 hours. It can search for 3 hours at 925 kilometres (500 nautical miles) from base or for 8 hours at 370 kilometres (200 nautical miles). When employed in these roles the CL-215 may be fitted with additional equipment to the customer's individual requirements.

As a transport the CL-215 has a maximum range of 3,000 kilometres (1,620 nautical miles) and can be fitted to carry up to 26 passengers or 3,928 kilograms (8,600 pounds) of cargo.

April 1985

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L'avion amphibie CL-215

Le CL-215, construit par la société Canadair Limitée de Montréal, est l'un des avions les plus polyvalents en fabrication actuellement.

Le CL-215 est un robuste bimoteur amphibie possédant une grande distance franchissable et une autonomie élevée. Il est conçu pour des vols de longue durée à basse altitude et à vitesse réduite. Il se prête à une large gamme de tâches, dont la lutte contre les incendies de forêts, l'épandage, les missions de patrouille, de recherches et de sauvetage ainsi que le transport.

Son envergure est de 28,6 mètres (94 pieds) et son poids brut maximum, de 19 731 kilogrammes (43 500 livres).

Le CL-215 est propulsé par deux moteurs Pratt & Whitney R-2800 de 2 100 bhp; il peut embarquer une charge marchande de 5 442 kilogrammes (12 000 livres) et se déplace à un régime de croisière de 306 kilomètres/heure (165 noeuds).

Aménagé pour la lutte contre les incendies, le CL-215 est doté de deux citernes intérieures pouvant contenir 5 346 litres (1 176 gallons impériaux) de produit extincteur. Les citernes se remplissent de deux façons: en moins de dix secondes au moyen de deux écopes escamotables pendant que l'appareil vole au ras de la surface d'un plan d'eau, ou par chargement à terre en moins de deux minutes au moyen de deux adapteurs placés de part et d'autre du fuselage de l'avion.

Le CL-215 peut combattre un incendie pendant plus de quatre heures sans avitaillement. À une occasion, un CL-215 a effectué 225 largages d'eau sur des incendies en une seule journée et un autre en a fait 31 en une heure. Le CL-215 est souvent appelé à combattre des incendies dans les conditions les plus difficiles qui soient, y compris la fumée dense et les vents violents. L'appareil peut écoper sur un plan d'eau dont les vagues atteignent 1,2 mètre (4 pieds) de haut.

Un système intégré, conçu spécialement pour le CL-215, permet d'épandre divers liquides, entre autres des insecticides et des dispersants du pétrole. Des essais d'épandage aérien de nouveaux dispersants à faible toxicité sur des nappes de pétrole brut en mer ont donné entière satisfaction. Il n'est pas nécessaire d'enlever la rampe de pulvérisation du CL-215 pour les opérations normales de lutte contre les incendies.

Aménagé en vue de missions de recherches et de sauvetage, le CL-215 a une autonomie théorique de dix heures. Il peut effectuer des recherches pendant trois heures à 925 kilomètres (500 milles marins) de sa base ou pendant huit heures à 370 kilomètres (200 milles marins). Quand il sert à ces fins, le CL-215 peut être doté d'équipements en option pour répondre aux besoins des clients.

Comme avion de transport, le CL-215 possède une distance franchissable maximale de 3 000 kilomètres (1 620 milles marins). Il peut transporter un maximum de 26 passagers ou 3 928 kilogrammes (8 600 livres) de fret.

Avril 1985

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CL-215 Firefighting Amphibian

The Canadair CL-215 is a twin-engined utility transport designed primarily for forest firefighting. Design studies for the CL-215 were initiated in 1963 and the project was formally announced in February 1966. First flight of the CL-215 took place in October 1967 and the aircraft received its Canadian Type Approval in March 1969.

The CL-215 can be ground loaded with pre-mixed long term chemical retardants or the amphibian can scoop up to 5,346 litres (1,176 Imp. gals.) of water while skimming the surface of a suitable body of water. With an optional system installed, short term fire retardants can be mixed with the water during scooping. Scooping distance in still air from 15 metres (50 feet) clearance on the approach to 15 metres (50 feet) on the climb out is 1,200 metres (3,940 feet).

La Sécurité Civile of France has operated CL-215s since June 1969. The initial order was for 10 aircraft with follow-up purchases of an additional five. Based at Marseille and operating primarily along the Mediterranean coast, French CL-215s have made over 165,000 drops on forest fires.

The Province of Québec has operated 15 CL-215s since 1970 and in addition to normal firefighting duties, has found them invaluable as amphibious utility transports. Based in Québec City, aircraft are dispatched to seven remote bases according to the severity of the fire danger index.

The Government of Spain has purchased a total of 19 CL-215s. The first two amphibians were delivered in February 1971 to the Spanish Air Force which operates them for the Department of Agriculture. Aircraft are deployed to forward bases as required during the fire season.

Twelve CL-215s have been purchased by Greece for forest firefighting on the mainland and the islands. They are operated and maintained by the Hellenic Air Force for the Department of Agriculture. All water for fire suppression is scooped from the sea.

Other operators using the CL-215 for forest firefighting include Yugoslavia and Italy and the Canadian provinces of Manitoba and Ontario. The Royal Thai Navy uses the aircraft for coastal patrol and CVG Ferrominera Orinoco in Venezuela transports up to 26 employees to and from a dredge on the Orinoco River. The Venezuela passenger transports retain the firefighting capability.

An additional 29 CL-215s are in production for six Canadian provinces and the Federal Government of Canada. Newfoundland, Québec, Ontario, Manitoba, Saskatchewan and Alberta will take delivery of 12 aircraft, while 17 will go to the Federal Government for Yukon, North West Territories and establishment of a National Air Tanker Fleet (NATF). Federal aircraft of the NATF will be operated by the provinces.

Fleet time for the CL-215 is currently about 160,000 hours and the aircraft have dropped about 500,000 loads of water or 2.5 billion litres. During the time the CL-215 has been in service, thousands of fires have been brought under control and millions of dollars of property and forest value have been saved.

April 1985

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L'avion d'incendie amphibie CL-215

Le CL-215 de Canadair est un bimoteur de transport conçu principalement pour la lutte contre les incendies de forêts. Les études de conception ont débuté en 1963 et le projet a été annoncé officiellement en février 1965. Le bimoteur a effectué son premier vol en octobre 1967 et reçu son approbation de type canadien en mars 1969.

Le CL-215 peut recevoir au sol un mélange retardateur chimique à long terme ou écoper jusqu'à 5 346 litres d'eau (1 176 gallons impériaux) en glissant à la surface d'un plan d'eau adéquat. Par temps calme, la distance de manoeuvre à partir d'une hauteur de 15 mètres (50 pieds) à l'approche jusqu'à une hauteur de 15 mètres (50 pieds) au décollage est de 1 200 mètres (3 940 pieds). Un équipement facultatif permet d'incorporer des retardateurs à court terme pendant l'écopage.

La Sécurité civile de France exploite des CL-215 depuis juin 1969. Elle en avait d'abord commandé dix puis s'est portée acquéreur de cinq autres. Basés à Marseille et utilisés surtout sur la côte méditerranéenne, ses appareils ont effectué au-delà de 165 000 largages sur des incendies de forêts.

Le Québec a fait l'acquisition de quinze CL-215 depuis 1970. Il les utilise non seulement pour combattre les incendies de forêts mais aussi comme avion de transport utilitaire amphibie. Basés à Québec, les appareils sont envoyés dans sept bases éloignées, compte tenu de la gravité des risques d'incendie.

Le gouvernement d'Espagne a acheté 19 CL-215. Il a reçu les deux premiers en février 1971 et les a confiés à son armée de l'air qui les exploite pour le compte du ministère de l'Agriculture. Les appareils sont également envoyés dans différentes bases pendant la saison des incendies de forêts.

La Grèce a acheté douze CL-215 pour combattre les incendies de forêt sur le continent et dans les îles. Exploités et entretenus par l'armée de l'air pour le compte du ministère de l'Agriculture, les appareils écopent la totalité de l'eau dans la mer.

Les autres utilisateurs de CL-215 pour la lutte contre les incendies sont le Manitoba et l'Ontario, la Yougoslavie et l'Italie. Par ailleurs, la marine royale de la Thaïlande possède des CL-215 destinés à la surveillance côtière. La société CVG Ferrominera Orinoco du Venezuela est aussi propriétaire d'avions qui assurent le transport de 26 passagers travaillant sur les dragues de la rivière Orinoco et peuvent servir à la lutte contre les incendies.

Canadair a reçu une commande de 29 appareils destinés à six provinces canadiennes et au gouvernement fédéral. Les provinces de Terre-Neuve, du Québec, de l'Ontario, du Manitoba, de la Saskatchewan et de l'Alberta prendront livraison de 12 appareils tandis que les 17 autres seront destinés au gouvernement fédéral pour le compte du Yukon et des Territoires du Nord-Ouest et la création d'un parc national d'avions-citernes. Ces 17 appareils seront exploités par les provinces.

Au total, les CL-215 ont enregistré 160 000 heures de vol et déversé quelque 2 500 000 000 de litres d'eau en 500 000 manoeuvres. Depuis qu'il a été mis sur le marché, le CL-215 a permis de maîtriser des milliers d'incendies et d'épargner des millions de dollars en biens et en forêts.

Avril 1985



canadair CL-215

Litho Canada



canadair CL-215

Litho Canada



February 26, 1987

Dear Sir,

Your request for information on our Canadair CL-215 Amphibious firefighting aircraft has been noted.

We trust you will find the enclosed descriptive material informative and we thank you for your interest in our product.

Should you require further information, please contact our Marketing Director, Mr. J.G.L. Robillard.

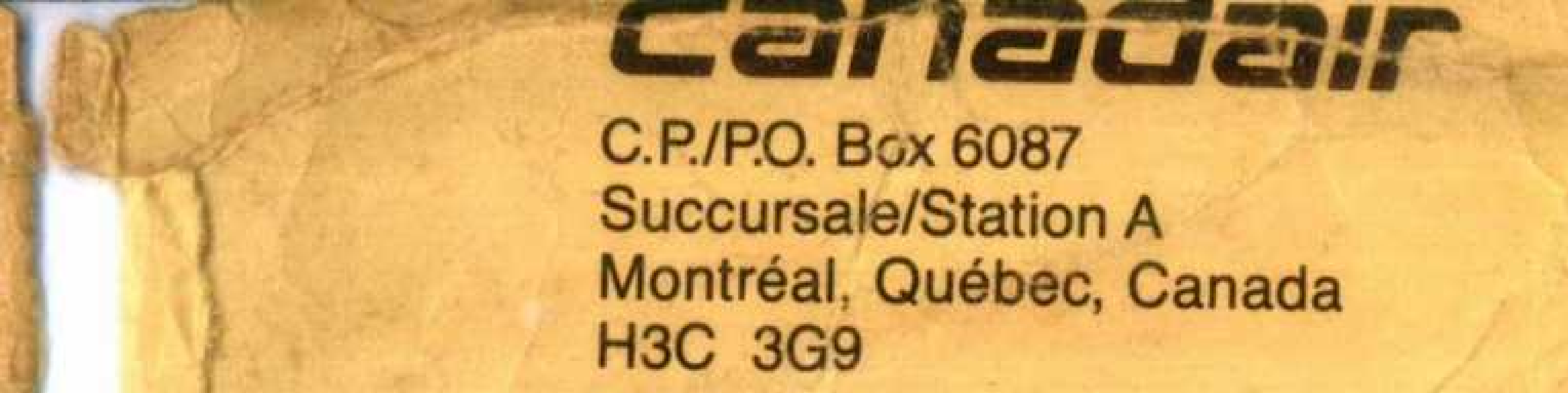
Yours truly,

M.W.L. Davidson
Administrator
CL-215 Marketing

Enclosures

MD:st

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2 Fotos

